

My name is Ex. 6 Personal Privacy (PP) 17 year resident, raising kids in the black hills. I own property along the Cheyenne River, I have animals that drink from it, I have an Inyan Kara domestic well that supplies household water and drinking water for livestock. I haul my family's drinking water from a minnelusa well. (see attached well log data from Ferguson well adjacent to Belitz 320 ft well. Belitz well log is missing) (note flowing cave in Ferguson well).

Yes, I understand the interest a mining company would have in ISL at the Dewey / Burdock location . I do, however, feel that my water and the water of my community could be irreversibly harmed. Besides inadequate standards for settling pond waste that could potentially contaminate the river and the much utilized Angostura Reservoir, today we are talking about Aquifers. The Inyan Kara and Minnelusa.

UIC (Underground Injection Control) Class III Area Permit for Inyan Kara Group Aquifers.

These proposed mining activities pose a risk to my Inyan Kara water by undetected or late detected excursions as I am down gradient from the mining activity.

UIC Class V area Permit for deep injection wells that would be used to dispose of in situ mining waste fluids into the Minnelusa Formation.

The Minnelusa aquifer is a high quality and well utilized aquifer in the southern black hills. In addition to the domestic Minnelusa well that we haul drinking water from, this aquifer sits approximately 1000 ft below my property making it a potential drinking water source for my family and livestock for generations to come. According to "Atlas of Water Resources of the Black Hills", the Minnelusa Aquifer flows from the proposed ISL site to my property. The contaminates injected are likely to pollute this potential drinking water source sometime in the future.

When I spoke with 4 Hydrologists at the USGS on March 29 th 2017, I learned the following. Yes, the flow model (Fig. 114, pg.103 Atlas of Water Resources of the Black Hills) does indicate the Minnelusa flowing from Dewey / Burdock to the south east. However, you can not just look at this model. The water in these aquifers, can be really hard to track their flow. In cave environments such as the Minnelusa , underground water almost flows like a river. There are local and regional impacts on the flow systems that are not indicated on Fig. 114.

According to a National Water Data Base, there are a minimum of 125 wells drilled into the Minnelusa Aquifer in Fall River County. I believe there are more. My Families Well was drilled approximately 20 years ago and there is no record of it in the current State DENR Well log data site. Speaking with a DENR employee May 9 th ,2017, I was told that many well logs were not submitted especially those during or before the 1980's. We know that the Minnelusa and the Madison (a highly utilized and extremely important aquifer) mix.

The USGS Atlas of Water Resources of the Black Hills, Pg 109 Table 13 indicates Cascade Springs is mostly Madison with dissolved Minnelusa minerals. Cascade Springs is also a utilized drinking water source, Cascade falls is a highly visited swimming area attraction, and the 1880 irrigation system from this source provides water for over 1000 acres of hay, fruit and vegetable production and livestock watering ponds for area land owners including my own pond, hay fields, and apple orchard.

The Minnelusa Formation is overlain by the Opeche Shale, which separates the Minnelusa aquifer from the Minnekahta aquifer. The Minnelusa aquifer often is hydraulically separated from the underlying Madison aquifer by shales in the lower portion of the Minnelusa Formation. However, in many areas the Minnelusa aquifer is in hydraulic connection with the Madison aquifer.

(<https://pubs.usgs.gov/ha/ha745c/ha745cIntro.html> Potentiometric Surface of the Minnelusa Aquifer in the Black Hills Area, South Dakota

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U.S. GEOLOGICAL SURVEY

Hydrologic Investigations Atlas HA-745-C

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Information on Deep Well injection in North Dakota State geologist Ed Murphy says injection wells are required to be drilled into the Dakota Group zone, a layer about 5,000 feet down where the Inyan Kara sandstone formation provides a porous container for the liquid.

(LAUREN DONOVAN Bismarck Tribune Mar 31, 2016)

Other requirements for the permitting process:

? SWD's over shallow aquifers require a geotechnical analysis by a qualified, independent contractor before a proposed location will be considered. This is to determine the suitability of the shallow subsurface geology to protect the shallow aquifer.

? Injection must be into a formation with an upper and lower confining zone to prevent migration of fluids into other formations or fresh water zones. In North Dakota, the disposal zone is typically one half mile to one mile below the surface, into the Dakota Group.

(<https://www.dmr.nd.gov/oilgas/undergroundfaq.asp#mr10>)

Because of this scientific data, I believe the EPA should not even consider permitting a UIC Class V area Permit for deep injection wells that would be used to dispose of in situ mining waste fluids into the Minnelusa Formation. The Minnelusa is too shallow, it is unconfined, it is known to mix with a very important aquifer, and is itself is an important and currently used aquifer.

Thank you for protecting our water,